ROLE OF CYTOLOGY AND COLPOSCOPICALLY DIRECTED BIOPSIES IN VARIOUS LESIONS OF CERVIX

THESIS
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MASTER OF SURGERY
(OBSTETRICS & GYNAECOLOGY)
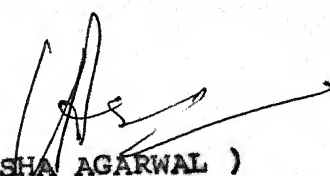
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C E R T I F I C A T E

This is to certify that the work in connection with the thesis, "ROLE OF CYTOLOGY AND COLPOSCOPICALLY DIRECTED BIOPSIES IN VARIOUS LESIONS OF CERVIX" was conducted in the Department of Obstetrics and Gynaecology by DR. MAHINDER KAUR under my personal supervision and guidance. The techniques embodied in the thesis were undertaken by the candidate herself and her observations and results have been periodically checked by me.

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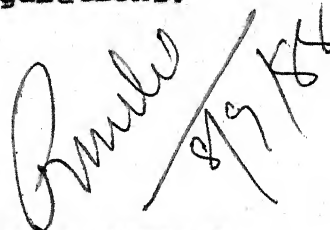and Gynaecology,
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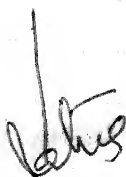
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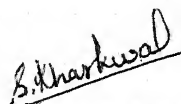M. L. B. Medical College,
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A C K N O W L E D G E M E N T S

One is comfronted with a great difficulty when words find themselves unable to express what ene feels in the depth of the heart.

I find no words to express my deep sense of gratitute and humble thanks to my esteemed and learhed teacher Dr. U. Agarwal, M.S., Reqder in Department of Obstetrics & Gynaecology, M.L.B. Medical College, Jhansi, whose constant ecnouragement and able guidance gave me strength and vigour to stand this difficult task of mine and without whose affectionate supervision and sympathetic attitude this work of mine would have remained a thing of the past.

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Finally I express my heartiest and most humble feelings for my parents, whose passionate affection, advise and encouragement have always helped me cross all hurdles, and in whose humble feet this work of mine is dedicated.

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C O N T E N T S

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INTRODUCTION

INTRODUCTION

Though spectacular advances have been made in the field of diagnostics and treatment, carcinoma of the cervix, an easily accessible organ, still remains the commonest cancer of women in India. Now a days, cervical cancer is considered a preventable disease and early diagnosis and treatment of any cervical lesion is an important step towards cancer prevention. This has stimulated the introduction of newer techniques which could aid the clinician in arriving at an early diagnosis of carcinoma cervix. An integrated approach of cytological study of exfoliated cells, colposcopy and histopathology has been adopted for an early diagnosis of carcinoma cervix. Each of these techniques has its own merits and demerits.

Cytology of exfoliated cells from vagina, cervix and uterus was a major break through in the early diagnosis of uterine cancer by Papanicolaou and Traut in 1943. It is considered to be the most practical method of cervical screening as it is simple, relatively inexpensive, reliable, less time consuming and generally applicable. At present 85 to 90 percent of neoplastic and pre neoplastic conditions of cervix can be picked up by cytological examination alone (Koss 1968). There is a general agreement that women should have regular vaginal cytologic examinations from the time when she becomes sexually active.

First smear should be taken at 30 years of women's life. Second smear should be taken one year after the first to overcome the false negative rate. If the two smears are negative, screening should be done every two years till 55 years of age. However, by cytology alongs, the exact source of cancer cells can not be pinpointed, as the cells are collected from the pool of exfoliated cells in the posterior fornix of vagina and cervical scrape.

Histopathology is a time honoured method of definitive diagnosis of any lesions, but it can not be used as a screening method. In patients with abnormal cytology, but without gross visible lesion, it is difficult to decide the site of biopsy and often a cone biopsy is taken. A surgical intervention of this type has certain drawbacks as it requires 2-4 days hospitalisation with significant postoperative complications like bleeding, infection, infertility and incompetent os. In such cases colposcopy has much to offer.

First account of colposcopy was published in 1925 by Hans Hinsleman. His original beleif was that, the earliest cancer of the cervix must occur as a dot a minute ulcer or tumour which could be recognised by means of a suitable magnification and illumination. For this he designed a microscope using a strong light source which

he called a colposcope. Colposcopy consists of examining the illuminated cervix and lower genital tract at a magnification intermediate between naked eye and light microscopy. Colposcopy stands between cytology and histology as an intermedium between population screening and definitive tissue diagnosis.

It is complementary to cytologic investigation in providing a most useful office-type procedure for elucidating problems relating to recognizing specific disorders of the cervix among patients preselected by cytologic approaches. It also helps in determining indications for biopsy, locating sites for and extent of biopsy, and stipulating types of biopsy techniques. It has been shown to be valuable in avoiding over treatment and exclusively traumatic or inherently hazardous diagnostic methods (such as cervical conization) for handling otherwise minor or trivial lesions, while at the same time not over looking significant ones which might thereby have been left untreated or inadequately managed.

Therefore cytology and colposcopy combined are important in early diagnosis of cancer cervix.

The present study has been undertaken to evaluate the complementary role of cytology, colposcopy and histopathology in the early diagnosis of cervical lesions.

AIMS OF STUDY

1. The use of colposcopy as a screening procedure in diagnosing early malignant changes of cervix.

2. To determine the value of combined cytology, colposcopy and histopathology in predicting the final diagnosis of cervical lesions.

3. To study the prevelance rate of dysplasia and genital malignancies of the cervix.

REVIEW OF LITRATURE

R E V I E W   O F   L I T E R A T U R E

COLPOSCOPY

It is a unique method of diagnosing and observing any cervical or vaginal lesion in vivo.

In 1925, Hans Hinselmann, Director of Gynaecological Clinic of University of Hamburg, invented optical device that permitted him to examine the surface of uterine cervix under great magnification. The instrument consists of a binocular magnification with sharply foccussed light which could detect the earliest cancer of the uterine cervix. For his first experiment, Hinselmann used a binocular magnifying lens placing on a pile of books at the level of patients' vagina. He had constructed the device himself to improve his ability to inspect vulva, vagina and cervical pertio. After lengthy trials with Leitz dissecting lenses, he succeeded in fixing the binocular lenses together with a central illumination source onto a movable stand.

From the begining, Hinselmann was optimistic about the success of his method. He soon formulated the concept that every woman who has had a child should be subjected to colposcopy every one or two years in order to be sure that she was safe from cervical cancer. It was his feeling that formal training was neccessary for an individual to do competent colposcopy.

Prior observations of superficial epithelial atypia by Von Franque, Shauenstein, Pronai, Rosthorn, Schottlonder and Rubin provided the stimulus that led to Hinselmann's invention and an equally important part was played by technicians at Leitz and Zeiss, and at Moeller and Kern in resolving the complex problems that the idea presented. With the aid of his new exploratory method, named colposcopy, Hinselmann described and systematized a number of cervical lesion that had been previously unknown. The great merit of his achievement is not simply the diagnostic instrument itself but the clear understanding of cervical pathology that has resulted from its use. Performance of repeat biopsied and the correlation of histologic slides with colposcopic views permitted Hinselmann to develop a concept of the origin of cervical carcinoma that is still fundamental in the early diagnosis of this disorder (along with Papanicolaou's cytological examination).

Colposcopy was seen being widely practised in Germany, where extensive series of examination were reported and tabulated by Mestwerdt (1939), Hampt (1941), Triete(1942), Ganse (1942) and Limberg (1952). This occured inspite of the fact that Schillers introduced his Lugol's staining test in 1927, which at first compared with colposcopy and regarded its early adoption. Through the work of Anderes (1936) and

Wespi (1938), Colposcopy was popularised in Switzerland, where such well known practioners as Glatthaar and de Watteville also described their experience in later years.

The procedure was introduced into Italy by Cattaneo's translation of Hinselmann's Introduction to Colposcopy in 1940, and in Austria by Antione (1949) who tried to improve upon the technique by devicing colpmi-croscopy.

Palmer made the virtues of colposcopy well known in France in 1950, and its position was strengthened when Frank-Brentano and de Watteville accorded it a pre-eminent position in their discussion of 'Early diagnosis of cervical cancer' in 1952. Since that time important treatises have been written by Bret and Coupez (1960) in France and by Masciotta (1954) and Mossetti and Russo (1962) in Italy, and there have been notable atlases produced in Germany by Mestwerdt (1953), and Cramer (1956). Although significant papers appeared in England, notably the discussion by Youseff (1957), use of the method is still not widespread in that country. Adoption of colposcopy on a general basis in Australia was aided by the reports of Coppleson (1959), Browne (1960), Garret (1961) and Cope (1961).

Colposcopy was descrived relatively early in Spain by Martinez de la Riva in 1944, Alba in 1947, and

Varela in 1957, but its widespread use did not begin until
the 1960's following the reports of Gonzalez-Merlo, Rodrignez-
Soriano, and Mateu-Aragones and Dexus.

All in all, the technique actually gained
popularity more quickly in Latin America, where particularly
important papers included those of Jurgens (1933), Jacob
(1939), Goulart de Andrade (1940), Cruz (1941), Reiper (1941),
Gori and Bayona (1943) and Rocha (1946).

In United States, however, colposcopy encountered
firm resistance, at least in part because it was considered
to be a technique that competed with cytology. Scheffey
(1955) was one of the first American authors to present
his experience with the method; other were Lang and Rakoff
(1956), Schmitt (1957) Trace (1959), Olson and Nichold (1960),
Graham (1963) and Dampeer (1962). Coppleson and Reid suggested
that in addition to the great popularity of cytology and the
lack of enthusiasm with which colposcopy was received by lead-
ing Gynaecologists, to explain the limited used of colposcopy
in the United States one must point to the small number of
publications in English and the restricted anatomic and patho-
logic training of the American Gynaecologist, to whom the
complex nomenclature of the traditional colposcopists has been
difficult to assimilate.

Hinselmann in 1938, recommended the use of 2% acetic acid, principally because of its albumin precipitating effect on the cervical mucus, which often distorts the examination. There is a corresponding improvement in the clearity of the colposcopic image to the point that many lesions are revealed by this reagent. Difference in cellular density, thickness and keratinization of the mucosa, breaks in the epithelium and even columnar papillae can be clearly seen after acetic acid has been applied. According to Game however, the vascular bed becomes less evident, perhaps due to arteriolar vasospasm.

Various techniques have been proposed to obtain better visualization of the cervical blood vessels. Hinselmann recommended a flourescent lamp, but this had little or no acceptance. Kruger used ethyl chloride to differentiate typical vessels (which contract upon application of chemical), from the atypical ones of carcinoma (which do not).

Majewski painted the cervix with 1:1000 solution of epinephrine or nor epinephrine and claimed that in 30 seconds the vascular network, especially the capillaries became more evident. Manter favoured this method as with Mateu-Aragones (1947) emphasised that a green filter over the lens provides the best visualization of the vascular bed of the cervix.

Madej (1951) proposed subsititution of 5% lactic acid for the acetic acid but there seems to be no advantage to this, except that it may make easier to recognise instances of re-epithelization. An aquous solution of metacresyl sulphone methane acid (50% Negatol) may be used for the same purpose.

Lo Wan-Hua has proposed in vivo staining method to be applied after the acetic acid solution. It consists of painting with haemotoxylin solution for 1 to 2 minutes and then 0.5% hydrochloric acid for 1 minute. A positive test implying malignancy, consists of a deep blue stain of any part of the cervix. A light blue colour is read as negative. Lo-Wan-Hua claims a 94% accuracy in early diagnosis of cervical cancer.

Gonzalez-Merlo has emphasised the lack of specificity of Schiller's test, and an experienced colposcopist derives little benefit from it. However, it was thought to be useful adjunct in the differentiation of some atypical images which look a like superficially such as from ground structure and vaginitis. Application of Lugol's iodine also makes possible to define the exact limits of a lesion and to study its degree as well as the extent of regularity of the epithelium.

The twentieth century might will be called the age of photography. The usefulness of colpophotographs in discussions of colposcopic problems has become obvious. All current colposcopic presentations rely on such objective material including those of Bauer, Bauer and Seidl, Bolten, Cartier, Coppleson, Pixley and Reid, Couper, Carrera and Dexeus, Cramer and Ohley, Fernandes, Ganse Hinselmann and Schitt, Johannison et al.

In 1956, a refinenment in the photographic techniques was done by Koller, Kolstad and Stafl, Lane, Lust Menken, Navratil, Rieper and Fonesca, Von Scheidt, Schmitt and Seidl. Photography is now possible without electronic flash by using the combination of a bright halogen light and highly sensitive film. Early results are encouraging although, not entirely satisfactory.

Stereocolpophotography consists, in principle of filming an object simultaneously with this cameras that are seperated by a distance of about equal to the spaces between ones eye.

The first successful stereoscopic photography was produced in 1954, with accessories attached to a Kern colpophotoscope (Lotmar and Wespi). Stereocameras for colposcopy have been manufactured by Leisgang (Berlin) and by Zeiss (Oberkochen). They made possible the development of series of slides in the women's clinic at Hamburg-

Barmbek (Mestwerdt and Gunther 1958) and Berlin-Moabit
(Lax and Zimblars) and more recently the series compiled
by St. Seidl at Hamburg all obtained by Leisgang colpo-
scopes. These collections are eminently suitable for
independant study. Enlarging these in a view master or
stereo viewer offers an impressive stereoscopic effect.
This technique was used by Scott to produce the (Stereo-
colposcopic Atlas of the uterine cervix, 1957).

Gusten Mesterwerdt in (1949), in his 'Atlas
on Colposcopy', described the colposcopic findings of
the cervix under different physiological and pathological
conditions. He also studied the importance of early detec-
tion of cancer cervix.

Sugihara (1958), demonstrated by means of
different models, a case of invasive cancer and another
of normal cervix considering the limitations of colpos-
copy, as it is possible to study only the superficial
vascular pattern, and when the transparency of the vessels
is decreased by hyperkeratosis, necrotic tissue or thick
mucus, the vessels becomes invisible.

In 1966, Jahannison, Kolstad and Sodenberg
correlated the cytologic and histologic pattern of
dysplasia, CIS and early invasive carcinoma by the help
of colposcopy.

Coppleson and Reid (1966), did a colposcopic study of the cervix and studied the various changes brought about during pregnancy. The majority of descriptions follow the criteria espoused by Epperson et al(1968) who characterise the cervical histopathology through the study of its three basic elements, epithelium, stroma and glands.

In 1973, Stafl and Mattingly gave a detailed account of colposcopic diagnosis of neoplasia. They have shown that the atypical vessels frequently represent the first colposcopic feature of invasion, and also suggested that certain colposcopic findings may indicate biological cancers before histological criteria and present to substantiate such a diagnosis.

In 1975, Richarts gave a comprehensive terminology for the premalignant lesions of cervix. He considered dysplasia and carcinoma-in-situ under a term cervical intra epithelial neoplasia.

Koss (1978), Graded CIN in following grades :

Grade I   --   Mild dysplasia

Grade II   --   Moderate dysplasia

Grade III   --   Severe dysplasia and carcinoma-in-situ.

In 1979, Sughimora published a paper on colposcopic findings in invasive carcinoma of the uterine cervix.

They studied the atypical transformation zone analytically
with regards to whiteness, surface contour, clarity and
levels of margin.

Silman, Boycee and Frutcher (1981) studied the
significance of atypical vessels and new vascularization
in cases of cervical neoplasia.

In 1982, El Rubinsten described the colposcopic
pattern of cervicitis, dysplasia and preinvasive cancer
of cervix and classified them as benign, atypical and
unspecific.

In 1983, Kolstad gave a detailed account of
vascular changes in CIN and invasive carcinoma. He des-
cribed the two most common patterns of CIN called puncta-
tions and mosaic and they may be compared to hairpin and
network capillaries. Cervical colposcopy is limited in
its ability to diagnose carcinomas that develop high in
the cervical canal. It has not yet been determined whether
these lesions actually aim at the site as often as they
seem to or whether they represent dysplastic patterns that
have been mislabelled. It is also difficult to carry out
in the presence of haemorrhagic oedema and necrosis.

Colposcopic diagnosis of cervical carcinoma
becomes more difficult postmenopausally. The squamocolumnar
junction retracts inwardly and with draws from view up into
the cervical cancer.

Colposcopic patterns have traditionally been grouped into two classes, typical and atypical, which was proposed by Gonzalez-Merlo, Calve de Mora and others, this classification attempts the definitive seperation of totally benign findings from those which imply the existence of histological disorders more or less related to cancer. But this method had a few drawbacks.

Mestwerdt (1960) proposed a division into physiologic, inflammatory and malignant states. For purpose of prognosis, a classification of benign, doubtful and malignant was also proposed.

At the first World Congress of Colposcopy and cervical and uterine pathology at Mardel Plata (November, (1972) it was proposed that colposcopic findings be classified into three groups :

(a) Normal or typical appearances (original mucosa, ectopy, zone of re-epithelialization, and atrophic mucosa).

(b) Pathologic images not related to malignancy (vaginitis, polyps, endometriosis, condyloma, sequalae of coagulation etc).

(c) Pathologic images compatible with malignancy (leukoplakia, ground structure, mosaic, erosion, zone of atypical transformation, atypical vascularization, uncharacteristic iodine negative zone carcinoma).

In German speaking circles, Hinselmann's original nomenclature has recently been in wide use. It is purely descriptive in form and is not intended to be related to cytologic or histologic characteristics. This system would have sufficed had it not been for the international spread of colposcopy, and the series of discoveries that accompanied its desemmination.

Another proposal for classification was developed during the second World Congress on Cervical Pathology held in Graz in 1975. This was discussed and modified by a task force on colposcopic nomenclature during the third session at Wiesbaden in 1976.

Three types of colposcopic patterns are now distinguished :

1. Normal findings (85 percent of all cases)

    (a) Squamous epithelium

    (b) Columnar epithelium

    (c) Transformation zone

2. Variations from normal

    (a) Inflammation

    (b) Polyp, cyst, papilloma, condyloma and other benign lesions

    (c) Erosion

    (d) Atrophic change

3. Abnormal findings :

(a) Leucoplakia

(b) Punctations

(c) Mosaic

(d) Acetic positive (white) epithelium

(e) Iodine negative area

(f) Combination forms

(g) Atypical transformation zone

(h) Changes suggestive of carcinoma

Although an internationally uniform system for designating colposcopic findings has been achieved thus is not complete complaince with it. Some authors add a fourth group to include findings that are indesécive.

Comparison of Old and New nomenclatures

Old	New
Original mucosa	Squamous epithelium
(a) Primary	(a) Mature
(b) Secondary	(b) Immature
	(c) Atrophic
Ectopy	Columnar epithelium
Transformation zone	Transformation zone
(a) Fresh	
(b) Old, vascular	
Atypical epithelium	Atypical epithelium

Ground structure	Mosaic
(a) Fine	
(b) Coarse	
(c) Mosaic	
Leucoplakia	Keratosis
(a) Fine	
(b) Coarse	
Atypical vessels	Atypical vessels
Surface alterations	Surface alterations
True erosion	Epithelial defects, ulcer

Colposcopy has played much greater role than cytology in screening the very early stages of cervical intraepithelial neoplasia. The practical problem involving cytologic methods are based on the work of Papanicolaou who in collaboration with Stokard (1917) reported the cyclical changes seen in the cells exfoliated from vaginal epithelium.

If routine cytological examination of a smear shows abnormality short of invasive cancer, colposcopic examination, along with a directed biopsy of cervix is the procedure of choice (Roseman et al 1980).

A combined use of cytology and colposcopy improves the rate of detection of serious abnormalities of the cervix and makes conization unnecessary in all, but in a few cases (Roachowiasg 1978).

Study	Cyto-logy	Colpo-scopy	Cyto-logy & Colpo-scopy	Cyto-logy and HPE	Colposcopy and Target biopsy	Target biopsy and surgical specimen
Preston et al 1962	69.0%	82.2%	-	-	-	-
Tunsken et al 1973	-	80.2%	95.4%	-	-	-
Ostergard et al 1973	-	-	-	-	85.0%	-
Moscolo et al 1974	93.4%	88.7%	-	100%	95.0%	-
Doelter et al 1975	-	-	-	-	96.0%	-
Cruikshauk et al 1976	86.0%	-	-	-	80.0%	-
Benedict et al 1976	-	-	-	-	-	86.0%
White et al 1976	-	-	-	-	-	84.0%
Hovdhanakul et al 1976	-	89.0%	-	-	94.0%	-
Geiseler et al 1977	94.2%	-	93.0%	-	-	-
Kautzen et al 1980	-	-	90.7%	-	93.0%	-
Allah Werdian 1980	-	-	83.0%	-	-	91.0%
Mary S.Lozawski 1982	84.6%	-	96.0%	-	88.0%	-
Townsend et al 1982	-	-	-	-	-	-
Lulla M. and Saraiya 1984	85.7%	86.0%	91.0%	-	-	-

The false negative rates reported by various authors have
been

Authors	INVESTIGATION			
	Cytology	Colpo-scopy	Combined Cytology & Colposcopy	Colposcopically directed biopsy
Stafl et al (1973)	2.7%	2.7%	–	0.7%
Vereer et al(1973)	17.0%	19.0%	Optimal result	–
Grismondi et al(1976)	2.9%	8.3%	0.37%	–
Fritscher et al(1977)	16.6%	12.9%	2.7%	–
Lowski et al (1980)	–	4.0%	2.7%	–
Lulla M.Saraiya(1984)	8.6%	6.7%	–	–

False positive rates

Stafl et al (1973)	8.0%	4.0%	–	3.3%
Lulla M.Saraiya(1984)	10.5%	3.7%	–	2.9%

Colposcopy helps to recognise false positive
cytology and avoids unnecessary cervical conization
(Feldman et al, 1976) 2.3% of histologically verified
precancerous cervix had unsuspected colposcopy (Bereliter
et al 1975).

The general tendency for medical practice to
refine diagnostic approaches, however, gave colposcopy
new impetus. During the past few years, renewed initiatives
from the United States and France, utilizing improved

techniques, have shown colposcopy to be more and more
indispensible to the Gynaecologist. This applied
especially to its capacity to aid in differential
diagnosis, as well as to the many other attributes
that have been recognised over the half century of
its use. Above all else, colposcopy has been shown
to be reliable in identifying benign conditions. Thus
it plays an increasing role in averting unnecessary
use of hot cryo or cryotherapy of the cervix. It has
recently been shown that even in elderly women, cancer
prophylaxis may be useful. At any rate, there is no
longer any question of cytology competing with colpo-
scopy. Quite the contrary, the procedures complement
each other ideally. The inherent limitation of cytology
are counter balanced some what by colposcopy.

The present study is undertaken to demonstrate
the complementary roles of cytology and colposcopy in the
early detection of cancer cervix.

MATERIAL & METHOD

MATERIAL AND METHOD

The present study was carried out in the Department of Obstetrics and Gynaecology and Pathology in M.L.B. Medical College, Jhansi from 1st July, 1987 to 31st March, 1988. The subjects were selected from out patient and inpatients department of Obstetrics and Gynaecology, M.L.B. Medical College, Jhansi.

SELECTION OF CASES

I. Study group - further divided into

      a) Reproductive age group with complaints

      b) Menopausal age group with complaints

Patients having the following complaints were studied,

1. Excessive discharge per vaginum

2. Pain in lower abdomen or back

3. Irritation or itching vulva

4. Dyspareunia

5. Suspicious 'naked-eye' appearance

6. History of known or suspected diethyl stilboestrol (DES) exposure 'in-utero'

7. Patients in whom a suspicious or positive Papanicolaou smear is obtained.

8. Menstrual abnormalities

      Menorrhagia   Postmenopausal bleeding

      Polymenorrhoea   Post coital bleeding

      Metrorrhagia   Intermenstrual bleeding

      Continuous bleeding   Amenorrhoea

II. Control group - follow up cases of normal delivery,
abortions and sterilization.

CLINICAL EXAMINATION

HISTORY - Detailed history of presenting complaints
was taken along with duration of complaint, obstetrical
history under the headings of gravida, parity, year, month,
date of last delivery and number of abortion noted. The
menstrual history was taken under the headings of cycle,
which include the number of days the flow lasted and the
duration of menstrual cycle, the amount of flow and the
date of the last menstrual period. Enquiry about family
history of diabetes and cancer cervix was also made along
with history of any venereal disease, pelvic inflammatory
disease or drug intake in the past.

GENERAL EXAMINATION

A thorough general examination was done with
special attention as regards to pallor, oedema, blood
pressure and weight of the patient. Brief systemic exami-
nation was also done.

PER SPECULUM EXAMINATION

Per speculum examination was done to inspect
the condition of cervix and vagina, type of discharge,
Bartholin's gland and cyst.

PERVAGINUM EXAMINATION

Pervaginum examination was done to know the size and consistency of the uterus, the condition of tubes and ovaries and any evidence of pelvic inflammation.

VAGINAL SMEAR

Guidelines - For preparing smears for gynaecological cytology Ayre's Spatula is used and the material is collected from the following sites :

a) Lateral vaginal wall
b) Posterior fornix
c) Ectocervix
d) Endocervix

For diagnosis of premalignant and malignant lesions of the cervix ecto and endocervical scrapes obtained with Ayre's spatula are the best.

Posterior vaginal material usually contain desquamated cells which may be degenerated. Therefore for early detection of cervical cancer it is imperative to scrape ecto and endocervix with Ayre's spatula.

TECHNIQUE OF TAKING SMEAR

Patient was made to lie in lithotomy position. To expose the cervix a non lubricant speculum was applied and vaginal smear was taken from the posterior fornix with the flat end of the Ayre's spatula and was spread on the slide and immediately fixed in cytology solution. Cervical smear was taken by scrapping the squamocolumnar junction

of the cervix by rotating it through 360°. The material
taken also include any abnormal looking area. The material
was again spread on a glass slide which was immediately
fixed in a glass bottle containing equal amounts of ether
with 80% alcohol.

(A) INTERPRETATION OF SMEARS

1. **Inflammatory smear** - shows increase in number of
   inflammatory cells predominantly polymorphonuclear
   type in acute infections and histiocytes, lymphocytes
   and occasionally plasma cells in chronic infection.

2. Increase in parabasal cells in young women and
   intermediate and superficial cells in older women.

3. Specific infestation by protozoan - trichomonalis or
   fungus, monilia or viral infections - papilloma virus
   or Herpes.

(B) CERVICAL INTRAEPITHELIAL NEOPLASIA

I CIN (I, II & III only severe dysplasia) cells show
   significant abnormalities in the nucleus, termed dys-
   karyosis while the cytoplasm matures like normal cells.

1. The nucleus is immature relative to its cytoplasm and
   carries the usual stigmata of neoplasia i.e. hyper-
   chromasia, disorganised chromatin pattern with dis-
   proportionate enlargement of nucleus.

2. The cytoplasm of dysplastic cells shows the normal squamous maturation similar to that of normal squamous cells so that despite the abnormal nucleus the cell resembles and remains comparable to its normal counter part. Therefore, the dyskaryotic cells can also be classified as superficial, intermediate and parabasal in tyæpe.

1. <u>Mild dysplasia (CIN - I)</u> - Smears show predominance of superficial or intermediate cells indicating that cells have retained the capacity for normal squamous differentiation.

2. <u>Moderate dysplasia (CIN-II)</u> - Shows cells transitional between parabasal and outer intermediate stage with dyskaryosis.

3. <u>In severe dysplasia (CIN-III)</u> - Parabasal dyskaryotic cells are present. These resemble squamous cell carcinoma in situ so closely that distinction between the two becomes largely a matter or opinion.

Degenerative changes of cells like vacuolation of cytoplasm, crenation of nuclei with irregular shape are common in mild to moderate dysplasia.

II <u>Carcinoma in situ</u> - In cervical scrapes, cells appear in two forms :-

i) Undifferentiated cells - Cells are completely undifferentiated and appear in syncitial sheets with poorly defined outlines. Nuclear chromatin is increased in amount and is finely stippled or condensed into coarse aggregation.

ii) Malignant parabasal cells - These are discrete round or oval cells with clear outlines and resembles parabasal cells. Nucleus is large, hyperchromatic with chromatin clumped into coarse aggregates which are irregular in size, shape and distribution. Degenerative changes of cells are commonly seen.

iii) Invasive carcinoma - It is easily diagnosed. Smear is usually blood stained and contains many polymorphonuclear leucocytes, bizzare differentiated and undifferentiated cells with typical features of malignancy, i.e. hyperchromasia, anaplasia and polychromasia.

COLPOSCOPY - What is Colposcopy ?

Colposcopy consists of examining the illuminated cervix and lower genital tract at a magnification intermediate between naked eye and light microscopy with an optical instrument the 'COLPOSCOPE'.

Instruments needed for colposcopy :-

1. Colposcope

2. The examination table

3. Self retaining speculum

4. Punch biopsy forceps

5. Cotton tipped applicators

6. Ayre's spatula

7. Tampoons

8. Chemicals :- Normal saline

   3% acetic acid

   Lugol's Iodine

   10% formalin

   Cytology solution

COLPOSCOPE :

Essential components of a colposcope include

- Magnification

- High intensity illumination

- Binocular eye piece for sterioscopic vision

Magnification - This can vary between 7.5X to 30X.
Best focal length of the working of colposcope is
between 200-250 mm, so that while viewing the cervix,
the colposcope does not need to enter the vagina.
Instruments which are used during colposcopy should
be of 20 to 25 cms length or shorter.

High intensity illumination - High intensity illumination
has been provided by fibreoptic light system. It is colder
for the patient as well as for the examiner. A green filter
is interposed between light source and the area being viewed.
This absorbs the red from the colour spectrum and allows the
blood vessels to stand out in detail as black objects. This
is an essential accessary in a colposcope for proper visuali-
zation of angioarchitecture.

METHOD OF EXAMINATION

Colposcopy is an outdoor procedure. Patient should
be made comfortable in lithiotomy position on the examination
table. The vulva should be examined and a self retaining
Cusco's bivalue speculum should be introduced with closed
blades. Blades should be opened only after the portio vagi-
nalis is visualized to avoid damage to the cervix. The
presence and character of mucus should be noted and naked
eye appearance of vagina should be recorded. Following steps
are involved in colposcopy :-

1. Inspection of unprepared cervix

2. Inspection through green filter

3. Inspection following application of 3% acetic acid

4. Inspection following Lugol's Iodine

5. Colposcopically directed biopsy should be taken
    whenever necessary.

UNAIDED COLPOSCOPY

Cervix should be cleaned with normal saline, wetting with normal saline is essential as it makes the tissues transparent. Unaided colposcopy first delineates the gross lesions and vascular details can be made out. To study the angioarchitacture, documentation by diagram is to be done at this stage.

INSPECTION THROUGH GREEN FILTER

For the study of angioarchitecture, it is mandatory to seem through green filter.

INSPECTION FOLLOWING APPLICATION OF 3% ACETIC ACID

3% acetic acid is applied on the cervix with the help of a cotton wool swab for better visualization of glandular mucosa and metaplastic epithelium. This solution is mucolytic and produces surface changes because of coagulation of cell protein after an interval of one minute. Metaplastic, dysplastic and malignant changes in glandular mucosa and pathological squamous epithelium becomes white on application of acetic acid. The action of acetic acid is transitory and fades off in 1-2 minutes, so repeated application may be necessary for proper visualization and detection of pathological lesions.

INSPECTION FOLLOWING LUGOL'S IODINE

Lugol's iodine made of pottassium iodine 4gms, crystalline iodine 2gms and distilled water 100 ml when applied over the cervix and vagina with the help of a cotton swab, stains the glycogen as mahogany brown. Staining is superficial and fades off in 8-10 minutes.

Iodine does not stain columnar epithelium, immature metaplastic epithelium, regenerating squamous epithelium, tissue after surgical trauma, intraepithelial neoplasia and invasive carcinoma, as these do not contain glycogen.
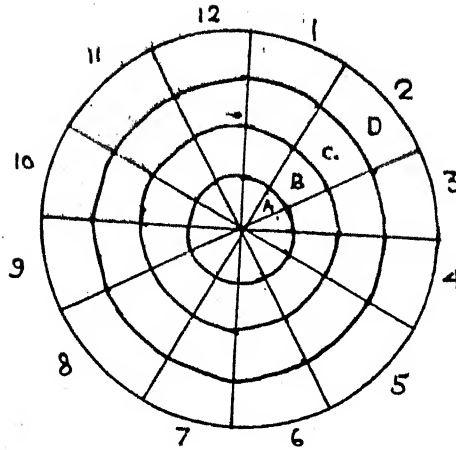
COLPOSCOPICALLY DIRECTED BIOPSY

Cervical punch biopsy is taken from the areas of maximum abnormalities and is sent for histopathological examination.

METHODS OF RECORDING COLPOSCOPIC FINDINGS

1. Diagramatic Representation : Precise recording of data is essential for good colposcopic technique.

(A) Hammond's Group of Cervix : The whole cervix is divided into 4 circular divisions A,B,C and D and 12 equal parts in clockwise fashion. In this graph colposcopic findings can be simply drawn on the graph. Diagnosis and specific lesion can be designated by checking the appropriate square.
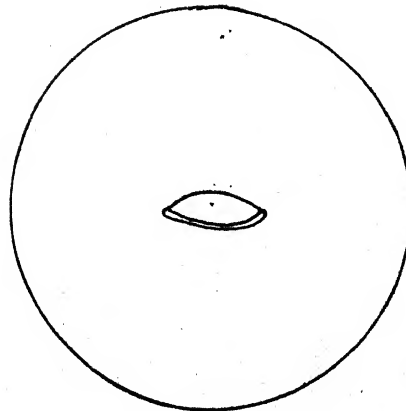
- NORMAL
- ECTOPY
- TR - ZONE
- CYSTIC CERVICITIS
- CERVICITIS
- REGENERATION OF
  TISSUE

- KERATOSIS
- PUNCTATION
- MOSAIC
- ATYPICAL TR - ZONE
- EROSION VERA
- ATYPICAL VESSELS

HAMMOND'S GRAPH OF CERVIX

- NORMAL
- ECTOPY
- ZONE OF
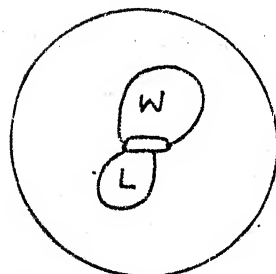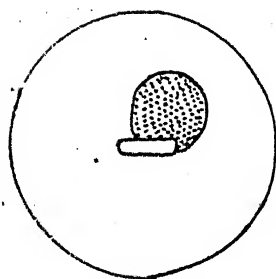- TRANSFORMATION
- NEBOTHIAN CYST

- LEUKOPLAKIA
- PUNCTATION
- MOSAIC
- ATYPICAL ZONE
- EROSION VERA

ODELL'S DIAGRAM

SCHEMATIC DRAWINGS OF COLPOSCOPIC FINDINGS

ORIGINAL SQUMOUS
EPITHELIUM

COLUMNAR EPITHELIUM

TRANSFORMAT
ZONE

WHITE EPITHELIUM

LEUKOPLAKIA

PUNCTATION

MOSAIC

ABNORMAL BLOOD VESSELS

SUSPECTED FRANK INVASION

INFLAMMATORY

CHANGES, PAPILLOMA

UNSTATISFACTORY
COLPOSCOPY

(B) <u>Odell's Diagram</u> : Exact size of biopsy are marked
out in Odell's diagram.

<u>INDICATIONS FOR COLPOSCOPY</u>

1. Symptomatic women :

- Persistant leucorrhoea

- Contact bleeding

- Menorrhagia

- Post menopausal bleeding

- Routine cases if possible

2. Suspicious naked eye appearance of cervix

3. Abnormal cytology

4. Follow up of dysplasia and post irradiation changes

5. In advanced cases it tells us the extent of the lesion

6. Also used to evaluate the females exposed to DES in uterus

7. For evaluation of lesions of vulva and vagina

8. Colposcopically directed laser/cryotherapy

<u>HISTOLOGIC BASIS OF COLPOSCOPY</u>

Colposcopic appearance of the tissue depends on

1. Surface epithelium

2. Stroma and its vascular configuration

The colposcope produces its effect by illuminating
both the surface epithelium and underlying stroma. The visual
image observed is a reflection of epithelial cell number,
organization and morphology. These various combinations of

epithelium and stroma produce different colposcopic
image which differ from each other in the following
morphological features viz :

1. Colour and opacity
2. Vascular configuration
3. Surface contour

1. Colour opacity : indicate the cell population of the
epithelium optical response of the tissue depends on cell
density, epithelial height, cellular differentiation and
the presence of mucous or keratin.

Tissues with hyperchromatic nuclei, decreased
cytoplasm or keratin accumulation reflect more light than
normal tissue and therefore, appears opaque or white under
colposcope.

2. Vascular configuration : The unique advantage of
colposcopy is that this is the only procedure available
for in vivo study of blood vessels. Tissues which differ
in cellular structure and activity show important differences
in number, size, configuration, calibre and disposition of
blood vessels.

3. Surface contour : Irregular surface counter reflects
growth disorder of the epithelium, specifically potential
neoplasia.

COLPOSCOPIC FINDINGS

Before we understand the detection of atypical epithelia on colposcopy, it is mandatory to know about the normal colposcopic findings.

(A) Normal colposcopic findings :

1. Original squamous epithelium (O.S.E.)

2. Columnar epithelium (C.E.)

3. Transformation zone (T.Z.)

(B) Abnormal colposcopic findings :

I. Atypical transformation zone

1. Aceto white epithelium

2. Punctation

3. Mosaic

4. Keratosis (Leukoplakia)

5. Abnormal blood vessels

II. Suspected frank invasive carcinoma

(C) Miscellaneous :

1. Vaginocervicitis

2. Atrophic epithelium

3. Condyloma, papilloma

(D) Unsatisfactory colposcopic findings

COLPOSCOPE ARTICULATED
TO EXAMINATION TABLE

INSTRUMENT TRAY
FOR COLPOSCOPY

LEISGANG COLPOSCOPE :
MODEL 1a

COLPOPHOTOGRAPH X 15, SHOWING ENDO-
CERVICAL MUCOSA WITHOUT PREPARATION

COLPOPHOTOGRAPH : AFTER APPLI-
CATION OF 2% ACETIC ACID

COLPOPHOTOGRAPH AFTER APPLI-
CATION OF SCHILLER'S IODINE

NORMAL COLPOSCOPIC FINDINGS

1. <u>Original squamous epithelium</u> : It is also called native squamous epithelium and lines the ectocervix and vagina. Colposcopically it is pink, smooth, transluscent and feature- less, light passes uniformly through several layers of homo- genous squamous cell layers and produce uniform homogeneous surface pattern.

Angioarchitecture of squamous epithelium consists of capillary patterns in the form of network or hairpin when connective tissues papillae of native squamous epithelium are poorly developed. Stromal vasculature is flattened and gives rise to network capillary pattern while hairpin pattern results when stromal papillae are well developed in squamous epithelium. A hairpin vessel is formed by ascending and descending branches of capillary loop within a papillae, these on end on view appear as fine punctations.

Original squamous epithelium does not take any stain with 3% acetic acid while it is turned, Mahogany brown with Lugol's or Schiller's Iodine because of its high glyco- gen content.

2. <u>Columnar epithelium</u> : This single layered epithelium lines the endocervical canal and sometimes may extend on to portio vaginalis. Though a colposcope, it appears red and irregular redness is due to transparency of columnar cells and proximity of stromal capillary bed to the surface.

This red colour is best marked out when epithelium is washed with normal saline. Vessels within the columnar epithelium are not easily delineated.

It does not take any stain with iodine, but on flooding with acetic acid the papillary mucosa turns white and gives characteristic grape like appearance.

3.   Transformation zone : The junction between the native squamous epithelium and columnar epithelium, squamocolumnar junction, normally coincides with the anatomical external os. In postmenopausal women it may be within the endocervical canal whereas most mensturating women display it on the exposed ectocervix. At this squamo columnar interface, columnar epithelium is gradually transformed to squamous epithelium by a process of metaplasia. This dynamic area, where metaplasia is taking place is called the TRANSFORMATION ZONE.

Colposcopically, it extends from squamo-squams junction (between original squamous epithelium and metaplastic squamous epithelium) to new squamo columnar junction. Transformation zone is the principle focus of colposcopic interest. It is very important to scrutinize this area carefully as all neoplastic and pre-neoplastic lesions start from the transformation zone, i.e. the area of epithelial unrest.

Metaplasia occurs throughout the females life time but is most active during three phaes of life. (i) Fetal (ii) Menarche (iii) First pregnancy

Metaplasia is divided into three stages -

1. Early metaplasia
2. Well developed metaplasia
3. Fully developed metaplasia

1. <u>Early Metaplasia</u> - Earliest colposcopic change of metaplasia involves loss of transparancy on tips of the villi of columnar epithelium. The process of metaplasia is multifocal. Mostly it is identified at the outer edge of columnar epithelium as tongues of tissues adjacent to squamous epithelium. With acetic acid it becomes more white because of the increased nuclear, cytoplasmic ratio in immature squamous cells. It may be difficult to differentiate it from dysplastic epithelium as even with iodine it does not take any stain due to absence of glycogen.

It is only this immature metaplastic stage which can transform to neoplasia. Mature metaplasia is a permanent change.

2. <u>Well developed metaplasia</u> - The tips of villi coalesce with each other and multilayered undifferentiated sheet of epithelial cells is formed. Colposcopically, individual opaque villi appear fused still does not take iodine stain.

3. <u>Fully developed metaplasia</u> - Smooth epithelium thus formed is the same as original squamous epithelium. Retention cysts and gland openings are the hall mark of fully developed metaplasia. These result as areas of columnar epithelium which remain in between the clefts of the villi. If there is an outlet to the surface, it is seen as gland openings. Typically they appear under colposcope as red creaters with dense white border because of heaped up squamous epithelium. If there is no communication to the outer surface retention cyst is formed.

Angioarchitecture of metaplastic epithelium is same as in original squamous epithelium. A third type of blood vessel which is not seen in normal squamous epithelium called typical branched blood vessels is seen in transformation zone. This runs parallel to the surface and is strikingly large with its dichrotomous branching.

ABNORMAL COLPOSCOPIC FINDINGS

<u>Atypical transformation zone</u> - Under influence of some intrinsic or extrinsic factors, atypical metaplasia takes place, resulting in atypical epithelium with neoplastic potential. Colposcopically, atypical metaplasia (CIN) is seen as atypical Tz which is characterised by presence of any one or more of the following :

COLPOPHOTOGRAPH : SHOWING GRAPE LIKE COLUMNAR
EPITHELIUM AFTER APPLICATION OF ACETIC ACID

COLPOPHOTOGRAPH : SHOWING RED PUNCTATE
VAGINITIS AFTER APPLICATION OF ACETIC ACID

COLPOPHOTOGRAPH : SHOWING LEUKOPLAKIA
AFTER APPLICATION OF ACETIC ACID

COLPOPHOTOGRAPH : SHOWING NEBOTHIAN
FOLLICLE WITH VASCULARIZATION

1. Acetowhite epithelium

2. Keratosis

3. Punctation and mosaic

4. Abnormal blood vessels.

1. <u>Acetowhite epithelium</u> : It signifies the presence of abnormal epithelium which is turned white after the application of acetic acid. This white focal lesion has smooth, flat surface which is in level with the surrounding normal tissue. Whiteness of the abnormal cells and also degree of whiteness goes parallel to the histological atypia of the cells.

2. <u>Keratosis (Leucoplakia)</u> : This is seen even with naked eye as a white patch, without application of acetic acid. This appearance is due to deflection of incident light by a dense layer of superficial cornified epithelium. Keratosis itself is a benign lesion but it may hide precancerous or cancerous lesion. Therefore, all keratotic patches should be biopsied.

3. <u>Punctation and mosaic</u> : The vascular patterns punctation and mosaic develop as a result of atypical metaplasia. Papillae do not fuse together and vascular network within each villus persists and undergoes proliferation. The central vascular network of these remaining stromal papillae features blood vessels loops which extend close to the surface of the overlying epithelium. Due to atypical proliferation of squamous

epithelium within the clefts there is lateral compression
of stromal papillae giving rise to punctations as seen
through a colposcope.

The hairpin or looped vessel within the papillae
may undergo dilatation and proliferation near the surface
or may form ramrifications around buds of atypical epithe-
lium giving rise to mosaic.

Colposcopically, punctation and mosaic terminal
vessels may show wide variations, in size, shape, mutual
arrangement and intercapillary distance depending on the
degree of associated histological abnormality.

Increased intercapillary distance is caused by
disorderly compression and disappearance of some stromal
papillae by rapidly proliferating atypical epithelium.

4. Abnormal blood vessels - These show foci of abnormal
blood vessels which lack regularity. Such blood vessels
are referred as atypical blood vessels. There are irregular
in contour, calibre and mutual arrangement with increased
intercapillary distance.

The presence of an atypical transformation zone
though highly suggestive, does not prove that neoplasia
exists. There are three grades :

GRADINGS	COLPOSCOPIC FINDING
Grade I	Flat white epithelium with a regular pattern of fine calibre vessels.
Grade II	Flat white epithelium with or without an irregular pattern of coarse calibre vessels.
Grade III	Very white epithelium with an irregular pattern of coarse calibre, coiled or bizarre or bizarre branching BVS, usually wide intercapillary distance, an irregular surface contour.

Histological correlation

Grade I	Normal to cervical intra epithelial neoplasia - I.
Grade II	Cervical intra epithelial neoplasia-II.
Grade III	Cervical intra epithelial neoplasia - III early invasion to frank carcinoma.

CIN - III and Microinvasive carcinoma -

The CIN - III lesions which generally progress to early invasive carcinoma or frank carcinoma are characterised by abnormally thickened acetowhite epithelium, atypical blood vessels, increased intercapillary distance, coarse and irregular punctation and moscaic and irregular

surface contour. As malignancy advances these changes become more and more pronounced.

According to Dzioba, if suspicious blood vessels are added to the classical image of mosaic and leukoplakia, there is a 66.6% incidence of severe dysplasia or in situ carcinoma. And if to that colposcopic complex one adds exophytic images, necrosis and irregular vascularization, the percentage of malignancy is 96.6.

The classification by Mataeu – Aragones is as follows :

Type of vascular network		Characteristics
I normal		Fine capillary network
II increased		increased normal network vascular pattern of vaginitis.
III dilated		dilated vessels, normal distribution.
IV irregular		hairpins, corkscrews, sudden change in direction.
V atypical		dilatation and stenosis sudden interruptions.

True vascular irregularities begnin with type III, although the probability of malignancy is low. In type IV, the incidence of cancer is 15%, and in type V, 86%.

There is a definite correlation between the intercapillary distance and the degree of epithelial atypia. Perpendicular orientation of the vessels to the epithelial surface and the absence of a clear circulatory insufficiency are characteristic of a preinvasive lesion.

MISCELLANEOUS

1. <u>Cervicovaginitis</u> - Inflammation is an extraordinarily frequent colposcopic finding, appearing in approximately 30% of cases. We distinguish three fundamental types of vaginitis.

    a) Diffuse or red punctate vaginitis

    b) White punctate (vaginitis of lymphoid follicle)

    c) Focal vaginitis

a) <u>Red punctate vaginitis</u> - This type of vaginitis has a characteristic pattern. Over a pale pink background some red clots are seen which extend diffusely over the cervix and rest of the vaginal mucosa. The cervix which harbors this type of cervicovaginitis is bathed with abundant secretions. When trichomonals are the responsible agents, the discharge is frothy, yellow and bubbly while it is white and in lumps if the infection is fungal.

b) <u>White punctate vaginitis</u> - In this variety the clots are yellowish-white again situated on more on less hyperaemic mucosa. In the centre of each white clot there is a single

capillary loop, without bifercation. These white clots
are slightly elevated and are distributed with notable
regularity over a major protion of the cervical portios
and the vagina.

This variety is caused almost exclusively by
fungi and to a lesser extent by trichomonas and non -
specific flora. These lessions do not take up Lugol's
iodine, so that the lesion becomes evident over an iodine
positive area.

c) Focal vaginitis - In these cases some spots or stains
are seen which speck the cervicovaginal mucosa. Some authors
have likened this appearance with the surface of strawberry
or a leopard's skin. Each spot or inflammatory islet is
formed by a group of red points, similar to those of diffuse
vaginitis but set above a notably more hyperaenric mucosa.
Focal vaginitis almost always has a trichomonal origin.

'Mixed vaginitis' is the term used to describe
the presence of more than one type of lesion.

B. Condylomatous papilloma - They appear as whitish
prominences, with sharp contours, and do not bleed even
when an attempt is made to dislodge them. With the acetic
acid test, some of those formation may exhibit a pseudo-
mosaic like surface, but this is not uncommon. They do not
take up iodine, or are stained only in part.

UNSATISFACTORY COLPOSCOPY

There are certain situations where colposcopic examination remain unsatisfactory. They are -

i) <u>Atropy</u> - In postmenopausal women the squamocolumnar columnar junction is not seen on colposcopy while the mucosa is found to be thin with fine branching vessels. An endo-cervical curettage is mandatory.

ii) <u>Conization</u> + Squamocolumnar junction is not visible adequately, rather it is distorated due to scanning.

iii) <u>Hystrectomy</u> - Acetowhite epithelium in vagina, vascular appearances of punctations and Schiller's test may be helpful.

iv) <u>Cryotherapy</u> - Following this squamous columnar junction is not seen in 15-20% cases. Further treatment depends on cytology. If normal - no problem.

COLPOSCOPICALLY DIRECTED PUNCH BIOPSY

After emptying the bladder, patient was put in dorsal position. Cusco's self retaining bivalve speculum was put in and colposcopy was done in the usual procedure, if areas of abnormal epithelium were seen which would be difficult to locate without a colposcope and if the patient was co-operative, a punch biopsy with a punch biopsy forceps at right angles to abnormal epithelium was taken the tissue

was immediately fixed in formalin. The bleeding area of the cervix was swabbed. If bleeding was excessive, vagina was packed and instruction given to the patient to remove the pack in the evening. The patient was given antibiotics and sent home. All biopsies were put in formalin and sent to pathology for histopathological examination. 5 μ sections were cut and stained by haemotoxylin and eosin.

MICROSCOPIC PATTERNS

The cellular changes associated with atypia are basically related to loss of normal maturation of the epithelium. There may be a tendency for the basal and parabasal cells to proliferate abnormally with the con-current lack of the usual layers of differentiated surface cells. This pattern is seen in basal cell hyperactivity or hyperplasia.

Conversely, increased maturation is demonstrated by the superficial type of cell with atypical changes, such as attempted keratinization with marked acidophilia of the cytoplasm and bizarre nuclear figures in the deeper layers. The depth of penetration of these abnormal cells is described by the modifying terms—mild, moderate and severe.

Mild atypia - The neoplastic cells extend one quarter to one third of the way from the basal layer to the surface. Difficulty is encountered in differentiating these mild

abnormalities from the epithelial reactions to infection
since both marked inflammatory changes and neoplasia commonly
occur at the same squamocolumnar junction.

Moderate atypia - The cellular aberrations extend through
one half to two thirds of the thickness of the epithelial
layer. These atypical cells may demonstrated to rapid matura-
tion, or penetration of parabasal and basal type cells well
into the upper layers.

Severe atypia - The anaplastic cells penetrate through
75 to 90 percent of the epithelium. As with invasive cancer
the abnormal cells do not follow a specific pattern. Areas
in which the basal and parabasal cells extend into the super-
ficial zone are adjacent to those in which the atypism is
characterised by early and bizarre maturation.

Carcinoma-in-situ - It is defined as a lesion in which the
entire thickness of the squamous epithelial layer is replaced
by cells microscopically indistinguishable from those of
frank invasive cancer with complete loss of stratification
but whith no evidence of stromal invasion.

Microinvasive carcinoma - A lesion is properly considered
invasive if there is a 'breakthrough' of the so called basal
lamina, with cancer cells spreading into the stromal tissue.
A common feature of the earliest invasive cell is its tendency
towards an abundant eosinophilic cytoplasm. Microinvasive car-
cinoma represents a stage in the progression that began with
intraepithelial neoplasia and ends with frankly invasive cancer.

OBSERVATION

O B S E R V A T I O N S

The present work was carried out in the Department of Obstetrics and Gynaecology and Department of Pathology, of M.L.B. Medical College, Jhansi over a period of one year. The study was performed on 240 cases, out of which 190 belonged to reproductive age group and 50 belonged to menopausal age group. In all cases a detailed history was taken. Vaginal and cervical cytology was also taken, and Schiller's iodine test was carried out in all cases. Colposcopy was done and wherever indicated target biopsies were taken. Many cases had a follow up cytology and colposcopy even after hystrectomy.

The following observations were made :

TABLE - I : SHOWING AGE DISTRIBUTION OF PATIENTS

| AGE GROUP (In years) | STUDY GROUP | | | | CONTROL GROUP | |
| | Reproductive | | Menopausal | | | |
	No.	%	No.	%	No.	%
21 - 25	33	17.4	-	-	14	28.00
26 - 30	38	20.0	-	-	14	28.00
31 - 35	51	26.8	-	-	4	8.00
36 - 40	35	18.4	-	-	8	16.00
41 - 45	19	10.0	10	20.0	10	20.00
46 - 50	10	5.2	20	40.0	-	-
51 - 55	4	2.1	9	18.0	-	-
56 - 60	-	-	6	12.0	-	-
61 - 65	-	-	2	4.0	-	-
66 & above	-	-	3	6.0	-	-
Total	190		50		50	

In the reproductive age group, maximum number of patients belonged in the age group of 31 - 35 years (26.8%). The next commonest age group was from 36 - 40 years of age (18.4%). In the menopausal age group, maximum number of cases (40%) were from 46 - 50 years of age. The next common group was from 41 - 45 years of age. In the control group, the predominant age group was from 21 - 30 years (56%).

TABLE - II : SHOWING PARITY DISTRIBUTION OF PATIENTS

| S.NO. | PARITY | STUDY GROUP | | | | CONTROL GROUP | |
| | | Reproductive | | Menopausal | | | |
		No.	%	No.	%	No.	%
1.	P_0	3	1.5	-	-	4	8.0
2.	P_1	19	10.0	3	6.0	18	36.0
3.	P_2	32	16.8	7	14.0	12	24.0
4.	P_3	40	21.0	13	26.0	14	28.0
5.	P_4	50	26.3	7	14.0	-	-
6.	P_5 and above	46	24.2	20	40.0	2	4.0
	Total	190		50		50	

When the parity distribution of patients was seen, it was found that in the reproductive age group, maximum number of patients (26.3%) were having four children. The next common group were patients having five or more children (24.2%).

In the menopausal age group, the maximum number of patients were having five or more children (40%), the next common group comprised of patients having three children (26.0%).

In the control group maximum number of patients were having a single child (36.0%).

TABLE - III : SHOWING SYMPTOMS OF THE STUDY GROUP

S.No.	Presenting symptoms	Reproductive		Menopausal	
		No.	%	No.	%
1.	Leucorrhoea	80	42.1	21	42.0
2.	Blooc mixed discharge	7	3.6	2	4.0
3.	Pain in lower abdomen	31	16.3	4	8.0
4.	Menstrual symptoms :				
	- Menorrhagia	22	11.5	2	4.0
	- Postmenopausal bleeding	-	-	11	22.0
5.	Post coital bleeding	26	13.6	-	-
6.	Istching vulva	4	2.1	1	2.0
7.	Burning in micturition	3	1.5	2	4.0
8.	Backache	13	6.8	-	-
9.	Infertility	2	1.0	-	-
10.	Prolapse	2	1.0	4	8.0
11.	Loss of weight	-	-	3	6.0
	Total	190		50	

The commonest symptom in both reproductive and menopausal age group was leucorrhoea, 42% each. In the reproductive age group the next commonest symptom was pain

in lower abdomen (16.3%) followed by post coital bleeding (13.6%). In the menopausal age group the next commonest symptom was postmenopausal bleeding (22.0%), while prolapse and pain in lower abdomen was seen in 8.0% cases each.

TABLE - IV : SHOWING FINDINGS ON P/S EXAMINATION

S.No.	Findings on perspeculum examination	Reproductive No.	%	Menopausal No.	%
1.	Normal	5	2.6	1	2.0
2.	Cervico vaginitis	44	23.1	15	30.0
3.	Erosion	66	34.7	6	12.0
4.	Polyp	8	4.2	2	4.0
5.	Prolapse	2	1.0	4	8.0
6.	Hypertrophied cervix	18	9.4	4	8.0
7.	Atrophic cervix	-	-	2	4.0
8.	Erosion, bleeds on touch	43	22.6	14	28.0
9.	Cauliflower growth	4	2.1	2	4.0
	Total	190		50	

On perspeculum examination, the commonest findings in the reproductive age group was erosion (34.7%), followed by cervico vaginitis (23.1%) and erosion which bled on touch in 22.6%.

In the menopausal age group, the commonest finding was cervico vaginitis seen in 30% cases, followed by erosion which bled on touch 28.0%, erosion was seen in 12% cases.

TABLE - V : PAPANICOLOAU SMEAR SHOWING PREDOMINANT CYTOLOGICAL FINDINGS

| S.No. | FINDINGS | STUDY GROUP | | | | CONTROL GROUP | |
| | | Reproductive | | Menopausal | | | |
		No.	%	No.	%	No.	%
1.	Normal	6	3.1	4	8.0	48	96.0
2.	Tricomonal	12	6.3	9	18.0	2	4.0
3.	Monilial	8	4.2	6	12.0	-	-
4.	Non specific inflammation	54	28.4	6	12.0	-	-
5.	Mild dyskaryosis	54	28.4	8	16.0	-	-
6.	Moderate dyskaryosis	28	14.7	4	8.0	-	-
7.	Severe dyskaryosis	20	10.5	5	10.0	-	-
8.	Suspicious of malignancy	3	1.5	2	4.0	-	-
9.	Malignant	5	2.6	6	12.0	-	-
	Total	190		50		50	

In reproductive age group pap smear of 38.9% patients showed an inflammatory smear, 28.4% had a mild dyskaryosis, 14.7% cases showed moderate dyskaryosis and 10.5% showed severe dyskaryosis, 1.5% cases were suspicious for malignancy, 2.6% were frankly malignant.

In the menopausal age group 46% showed an inflammatory smear. 16% cases showed mild dyskaryosis, 8% had moderate dyskaryosis, 10% had severe dyskaryosis, 4% cases were suspicious of malignancy and 12% were frank malignant.

In control group pap smear was normal in 96% cases. In 40% cases trichomonal inflammation was seen.

TABLE - VI : SHOWING COLPOSCOPY FINDINGS

| S.NO. | FINDINGS | STUDY GROUP | | | | CONTROL GROUP | |
| | | Reproductive | | Menopausal | | | |
		No.	%	No.	%	No.	%
1.	Normal	–	–	1	2.0	50	100.0
2.	Metaplasia	15	7.8	3	6.0		
3.	Mild dysplasia	52	27.3	6	12.0		
4.	Moderate dysplasia	30	15.7	5	10.0		
5.	Severe dysplasia	22	11.5	4	8.0		
6.	Carcinoma-in-situ	4	2.1	–	–		
7.	Invasive	5	2.6	8	16.0		
8.	Unsatisfactory	–	–	2	4.0		
9.	Cervico vaginitis	8	4.2	6	12.0		
10.	Red punctate	5	2.6	4	8.0		
11.	White punctate	4	2.1	2	4.0		
12.	Senile vaginitis	–	–	5	10.0		
13.	Ectopy	35	18.4	2	4.0		
14.	Polyp	10	5.2	2	4.0		
15.	Keratosis	–	–	–	–		
	Total	190		50		50	

Main findings on colposcopy were as follows. In reproductive age group metaplasia was seen in 7.8% cases. Inflammation was seen in 8.9% cases out of which 4.2% were cervico vaginitis, 2.6% of red punctate type and 2.1% of which punctate variety. Ectopy was seen in 18.4% cases, and polyp in 5.2%. Mild, moderate and severe dysplasia were seen in 27.3%, 15.7% and 11.5% cases respectively. Carcinoma-in-situ was seen in 2.1% cases and invasive cancer was seen in 2.6% cases.

In the menopausal age group 2.0% showed normal cervix and 6% showed metaplasia, mild, moderate and severe dysplasia were seen in 12%, 10% and 8% cases respectively. 16% cases showed invasive cancer. Inflammation was seen in 36% cases, out of which 12% had non specific cervico vaginitis, 8% cases showed red punctate vaginitis, 4% showed white punctate vaginitis. Senile vaginitis was seen in 10% cases. Ectopy and polyp was seen in 4% cases each. In 2 cases the colposcopy was unsatisfactory as the transformation zone could not be visualised.

TABLE - VII : SHOWING MAIN HISTOPATHOLOGICAL FINDINGS

S.NO.	FINDINGS	STUDY GROUP				TOTAL	
		Reproductive		Menopausal			
		No.	%	No.	%	No.	%
1.	Chronic cervicitis	30	38.4	-	-	30	26.7
2.	Erosion	1	1.3	2	5.8	3	2.6
3.	Polyp	3	3.8	5	14.7	8	7.1
4.	Leucoplakia	-	-	-	-	-	-
5.	Mild dysplasia	20	25.6	4	11.7	24	21.4
6.	Moderate dysplasia	8	10.2	9	26.4	17	15.1
7.	Severe dysplasia	9	11.5	8	23.5	17	15.1
8.	Carcinoma-in-situ	1	1.3	1	2.9	2	1.7
9.	Invasive cancer	4	5.1	3	8.8	7	6.2
10.	Normal epithelium	2	2.5	2	5.8	4	3.5
	Total	78		34		112	

In only 112 patients cervical biopsy was indicated out of the total group of 240 patients.

In reproductive age group 38.4% was had chronic cervicitis. Erosion and polyp was seen in 1.3% and 3.8% cases respectively. Mild, moderate and severe dysplasia was seen in 25.6%, 10.2% and 11.5% cases. Carcinoma in situ was seen in 1.3% cases, and invasive carcinoma was seen in 5.1% cases.

In the menopausal age group 5.8% cases showed
erosion, polyp was seen in 14.7% cases. Mild, moderate and
severe dysplasia was seen in 11.7%, 26.4% and 23.5% cases
respectively, Carcinoma in situ was seen in 2.9% cases.
Invasive cancer showed a comparatively higher incidence
of 8.8% cases.

Study of various parameters in dysplasia, pre-
invasive and invasive carcinoma.

TABLE - VIII : SHOWING CORRELATION OF AGE WITH DYSPLASIA
PREINVASIVE CARCINOMA & INVASIVE CARCINOMA

S.No.	Age in years	No.	Percentage
1.	10 - 19	0	-
2.	20 - 29	8	11.5
3.	30 - 39	20	28.9
4.	40 - 49	23	33.3
5.	7 50	18	26.0
	Total	69	

The most common age group involved in dysplasia
and carcinoma was from 40 to 49 years showing 33.3% cases.
The next commonest age group was from 30-39 years showing
a 28.9% incidence, as is shown in table VIII.

TABLE - IX : CORRELATION OF PARITY WITH DYSPLASIA, PREINVASIVE CARCINOMA AND INVASIVE CARCINOMA

S.No.	Parity	No.	%
1.	P_0	3	4.3
2.	P_1	3	4.3
3.	$P_2 - P_5$	36	52.1
4.	$7 \ P_5$	27	39.1
	Total	69	

The above table shows that the maximum number of cases (52.1%) belonged to patients having two to five children. The next common group involved was 39.1% cases having children more than 5.

TABLE - X : SHOWING AGE AT FIRST COITUS

S.No.	Age at coitus	No.	%
1.	10 - 19	54	78.2
2.	20 - 25	12	17.3
3.	26 - 30	3	4.3
4.	$7 \ 31$	-	-
	Total	69	

The above table shows that the maximum number of patients 78.2% had first coitus between 10 - 19 years of age.

The next commonest group was from 20 - 25 years of age showing a percentage of 17.3%. There was no incidence of dysplasia and carcinoma in women, who had their first coitus above 31 years of age.

TABLE - XI   :   SHOWING MAIN FINDINGS IN PATIENTS

S.No.	Findings	No.	%
1.	Discharge p/v	25	36.2
2.	Pain in lower abdomen	10	14.4
3.	Itching vulva	8	11.5
4.	Burning micturation	8	11.5
5.	Post coital bleeding	10	14.4
6.	Irregular bleeding p/v	8	11.5
	Total	69	

The above table shows that maximum number of patients 36.2% had discharge per vaginum. The next commonest symptom was post coital bleeding and pain in lower abdomen (14.4% each). Itching vulva, burning in micturation and irregular bleeding p/v was seen in 11.5% cases each.

TABLE - XII : <u>SHOWING MAIN FINDINGS ON P/S EXAMINATION</u>

S.No.	Findings	No.	%
1.	Chronic cervicitis	2	2.8
2.	Erosion, bleeds on touch	4	63.7
3.	Hypertrophied cervix	13	18.8
4.	Polyp	2	2.8
5.	Prolapse	2	2.8
6.	Cauliflower growth	6	8.6
	Total	69	

The above table shows that the most common findings on p/s examination was erosion which bleed on touch (63.7%). The next common finding was hypertrophied cervix (18.8%). Cauliflower growth was seen in 8.6% cases. Chronic cervicitis, polyp and prolapse was seen in 2.8% cases each.

TABLE - XIII : <u>SHOWING MAIN FINDINGS ON CYTOLOGY, COLPOSCOPY AND HISTOPATHOLOGICAL EXAMINATION</u>

S.No.	Findings	Cytology	Colposcopy	Histopathology
1.	Inflammatory	30	24	30
2.	Mild dysplasia	30	29	24
3.	Moderate dysplasia	13	20	17
4.	Severe dysplasia	14	14	17
5.	Carcinoma-in-situ	2	4	2
6.	Invasive	8	6	7
	Total	97	97	97

TABLE - A : SHOWING CORRELATION OF CYTOLOGY WITH COLPOSCOPY (DIFFERENCE OF GRADE ONE ABOVE OR BELOW IS TAKEN AS WITHIN NORMAL)

Colposcopy	No.of cases	CYTOLOGY					
		Infl.	Mild	Moderate	Severe	CIS	Invasive
Inflammatory	24	23	–	–	–	–	1*
Mild dysplasia	29	–	25	–	3*	–	1*
Moderate dysplasia	20	3*	–	12	5	–	–
Severe dysplasia	14	2*	2*	1	6	–	3*
CIS	4	–	3*	–	–	1	–
Invasive	6	2*	–	–	–	–	3
Total	97	30	30	13	14	1	8

Good correlation   =   77/97,   79.3%

False positive colposcopy =   12/97,   12.3%

False negative colposcopy =   8/97,   8.2%

On studying the correlation of cytology with colposcopy in the inflammatory group, 23 out of 24 cases tallied perfectly. One case was false negative.

In mild dysplastic group 25 out of 29 cases matched well. False negative colposcopy was seen in 4 cases.

In moderate dysplastic group 17, out of 20 cases talled well. There were 3 false positive colposcopies.

In severe dysplastic group, 7 out of 14 cases correlated well. There were 4 false positive and 3 false negative colposcopies.

Carcinoma-in-situ correlated well in one case only out of four. There were 3 false positive colposcopies.

In invasive carcinoma group out of 6 cases good correlation was seen in 4 cases. There were 2 false positive colposcopies.

TABLE - B : SHOWING CORRELATION OF COLPOSCOPY WITH HISTOLOGY

Colposcopy	No.of cases	HISTOLOGY					
		Infl.	Mild	Moderate	Severe	CIS	Invasive
Inflammatory	24	22	–	2*	–	–	–
Mild dysplasia	29	4	21	–	2*	–	2*
Moderate dysplasia	20	3*	–	15	–	–	2*
Severe dysplasia	14	–	2*	–	12	–	–
Carcinoma-in-situ	4	–	1*	–	1	2	–
Invasive	6	1*	–	–	2	–	3
Total	97	30	24	17	17	2	7

Good correlation = 80/97, 82.4%

False positive colposcopy = 7/97, 7.2%

False negative colposcopy = 8/97, 8.2%

Table B : shows correlation of colposcopy with colposcopically directed punch biopsy.

Out of 97 cases, 80 matched perfectly giving an accuracy of 82.4%. There were 7 false positive colposcopies (7.2%) and 8 false negative colposcopies (8.2%).

Out of 20 cases showing chronic cervicitis on punch biopsy, 26 tallied perfectly. There were four false positive colposcopies. 3 cases showed moderate dysplasia and one case showed invasive cancer which were found to be inflammatory on punch biopsy.

Out of 24 cases showing mild dysplasia on punch biopsy, 21 tallied well. 2 cases showed severe dysplasia and one case showed invasive cancer on colposcopy. Overdiagnosis was due to inflammatory changes associated with these smears.

Out of 17 cases showing moderate dysplastic changes on biopsy 15 tallied well, two cases showed false negative colposcopy which showed inflammatory changes only.

Severe dysplasia was shown in 17 cases on biopsy, out of which 13 tallied perfectly. There were two false negative results showing mild dysplastic changes on colposcopy and two cases of false positive results showing invasive carcinoma.

Carcinoma in situ correlated well with colposcopy and biopsy.

Invasive cancer was shown in 7 cases, out of which 3 tallied well. There were 4 false negative colposcopies.

TABLE- C : <u>SHOWING CYTOLOGY WITH COLPOSCOPICALLY DIRECTED BIOPSIES</u>

HISTOLOGY	No. of cases	CYTOLOGY					
		Infl.	Mild	Moderate	Severe	CIS	Invasive
Inflammatory	30	27	2	–	1*	–	–
Mild dysplasia	24	–	22	–	1*	–	1*
Moderate dysplasia	17	–	3	13	–	–	1*
Severe dysplasia	17	3*	1*	–	12	1	–
Carcinoma-in-situ	2	–	1*	–	–	1	–
Invasive	7	–	1*	–	–	–	6
Total	97	30	30	13	14	2	8

Good correlation = 87/97, 89.6%

False positive cytology = 4/97, 4.12%

False negative cytology = 6/97, 6.12%

Table C : shows the correlation of cytology with colposcopically directed biopsies.

It is seen that correlation has improved. Out of 97 cases, 87 tallied perfectly giving an accuracy of 89.6%. There were 4 false positive cytologies and 6 false negative cytologies.

Out of **30 cases** showing inflammation on cytology, 29 tallied perfectly. One case showing severe dysplasia on cytology was found to be inflammatory on punch biopsy.

Out of 24 cases showing mild dysplasia on histology, 22 tallied perfectly. One case showing severe dysplasia on cytology showed mild dysplasia on punch biopsy. One case showing invasive cancer was misdiagnosed and on histology was found to have mild dysplasia.

Out of 17 cases showing moderate dysplasia, 16 tallied well. One case showing invasive cancer on cytology was having moderate dysplasia on punch biopsy and subsequent hystrectomy.

Out of 17 cases showing severe dysplasia on histo-logy, 13 tallied perfectly. 3 cases showing inflammatory changes on cytological examination revealed severe dysplasia. Hystrectomy was performed in two cases. One case showed severe dysplasia and other showed moderate dysplasia.

Out of 2 cases showing carcinoma in situ. One was correlated well showing carcinoma in situ on both biopsy and hystrectomy. One case showed mild dysplasia on cytology. But when the suspicious area was biopsied it was found to have carcinoma in situ.

Out of 7 cases showing invasive cancer on histology 6 cases correlated perfectly. Only one case showed mild dysplasia on cytology.

TABLE - D : CORRELATION OF INITIAL HISTOLOGICAL DIAGNOSIS BY PUNCH BIOPSY AND FINAL HISTOLOGIC DIAGNOSIS BY HYSTRECTOMY SPECIMEN

Initial Histological diagnosis	No.of cases	FINAL HISTOLOGICAL DIAGNOSIS					
		Infl.	Mild	Moderate	Severe	CIS	Invasive
Inflammatory	2	1	1	-	-	-	-
Mild dysplasia	20	-	18	1	-	1*	-
Moderate dysplasia	19	-	1	16	1	-	1*
Severe dysplasia	6	-	-	-	6	-	-
Carcinoma-in-situ	3	-	-	-	-	3	-
Invasive	0	-	-	-	-	-	-
Total	50	1	20	17	7	4	1

Acceptable correlation between initial
and final histological diagnosis   = 48/50, 96.0%

Not correlated   = 2/50, 4.0%

Table D : shows correlation between initial histologic diagnosis by punch biopsy and final histologic diagnosis by hystrectomy specimen.

In 2 cases showing inflammatory lesion on punch biopsy, hystrectomy was carried out. One case was showing inflammatory and other mild dysplastic changes in cervix.

One case showing carcinoma on cytology and inflammation on colposcopy, and moderate dysplasia on punch biopsy was shown to have carcinoma body uterus extending into the endocervical region.

In another case showing severe dysplasia on cytology, and moderate dysplasia on colposcopically directed biopsy was found to have carcinoma of endocervix.

All other cases correlated well with the hystrectomy specimen. Thus it is clear that the only limitation of colposcopically directed punch biopsy is on endocervical lesion which could not be visulaised by colposcopy.

According to Jeffecoate (1975) incidence of CIN III, in women from Europeon stock is found to be 0.2 to 0.4%. In our study it is comparatively higher 8% in reproductive age group and 9% in menopausal group. Incidence of carcinoma in situ is 1.3% in reproductive group and 2.9% in menopausal group.

Invasive cancer was seen in 5.12% cases in reproductive group and 8.8% cases in menopausal group.

Study	Cytologi-cally	Colposco-pically	Combined
Limberg (1958)	89.0%	97.0%	99.4%
Navratil (1964)	87.0%	79.0%	98.4%
Coppleson & Reid (1967)	93.0%	92.0%	98.0%
Dexcus & Carrera (1972)	91.0%	94.0%	98.9%
Our study	79.0%	82.0%	89.6%

The accuracy of colposcopy ranges from 85 to 99.3% according to Ostergard et al (1973), Moscslo et al (1974). Boetter et al (1976) and Wah Werdian et al (1988).

DISCUSSION

D I S C U S S I O N

Colposcopy is an important tool which compliments cytology and histopathology in detection of various cervical lesions. The present study was conducted in the inpatient and Outpatient Department of Obstetrics and Gynaecology and Department of Pathology, M.L.B. Medical College, Jhansi to highlight the role of colposcopy in benign lesions, dysplasias and malignant lesions of the uterine cervix.

Carcinoma of the cervix is one of the commonest cancers of the female genital organs and its incidence is higher in Indian females due to low socioeconomic factors, poverty, rapid sexual maturity, early marriage, early pregnancy and multiparity. Early diagnosis of cancer and proper treatment of benign lesions prevents morbidity and mortality due to cancer.

The study group included a total of 240 subjects. Out of these 190 belonged to the symptomatic reproductive group of patients, and 50 belonged to menopausal group.

The control group had 50 asymptomatic patients who came for follow up of abortions, sterilization and post-natal check ups.

CLINICAL PROFILE

On studying the age distribution of patients, in overall study it was found that maximum number of patients were from the age group of 31-35 years (26.8%) in the reproductive age group. In the menopausal age group, maximum number of patients were from 46 to 50 years of age (40.0%).

On studying the age incidence in patients of dysplasia and invasive carcinoma, the maximum number of patients belonged to 40 to 49 years of age (33.3%) cases. The next common age group to be involved was from 30 to 39 years (28.9%).

Although invasive cancer of cervix is reported at all ages, even at birth, it now has two peaks, one at about 35 years and another at about 50 to 55 years following which there is a reduced incidence.

The commonest age incidence of cancer of uterine cervix is from 45 to 54 years of age as reported by Roa et al (1959), Das and Mukherjee (1961), Ahuja and Reddy (1963), and Wahi et al (1969).

According to Jeffcoate cervical intraepithelial neoplasia (Cercinoma in situ) occurs at a much lower age, one third of the cases being found in women less than 30 years old.

Excluding 'immune' races, the disease is more prevelant amongest women living in poor conditions, with a low income and in-different education. Invasive carcinoma of cervix is 20 times more commoner amongst the wives of unskilled labourers than in those of professional men. Detailed studies have revealed the certain occupation of men are associated with a high incidence of cervical carcinoma. The possible operating factors are, low standards of cleanliness (including penile hygiene) coitus or marriage at an early age, pregnancy of sexual intercourse and promiscuity of both partners (Jeffcoate, 1975).

The sexually active women is two to four times more likely to develop cancer of the cervix than is a sexually inactive women. Ninety five percent of invasive cancers occur in multiparae. High parity usually means frequent coitus during many years. starting at a younger age, and often poor socioeconomic conditions (Jeffcoate 1975).

In our study in over all cases 50.5% cases were having four or more children in the reproductive age group, in the menopausal age group 40% patients were having parity 5 or above in patients shown cervical lesions. While in case of dysplastic and malignant group, maximum number of patients 52.1% were having two to five children. This clearly shows that the rate of dysplasia of cancer of uterine cervix is commoner in multiparous women.

The practice of coitus is now established as
being a prime cause of cervical malignant disease, intra-
epithelial and invasive. The earlier the age of first
coitus, the more number of partners and the more promiscous
the partners, the greater the risk. One explanation is that
spermatozoa are themselves carcinogenic in that they provide
the cervical cells with large quantity of nuclear acids.
Normally, these cells are phagocytic to spermatozoa specially
when undergoing metaplasia (Jeffcoate, 1975).

In a study by Rotkin and King (1962), among
patients who beign coitus between age of 15 to 17 years,
twice as many had cervical cancers as compared to control
group. Few cancers develop in women who begin coitus after
the age of 21 years and almost none when coitus was as late
as 27 years. According to another study by Christopher and
Parker (1969) in a population of 38,939 women 38.6% were
married before 20 years of age and this high risk group had
61.0% proved cases of invasive cancer and 57.0% of carcinoma
in situ. In our study, maximum number of patients 78.2%, had
their first coitus before 19 years of age. There was not a
single case of dysplasia or carcinoma in women who practiced
coitus for the first time after 30 years of age.

The commonest symptom in both the reproductive
and menopausal group is leucorrhoea (42%). In the reproductive

age group, the next common finding is pain in lower abdomen (16.3%), followed by post coital bleeding (13.6%). In menopausal group the other common symptom is post-menopausal bleeding.

The four important symptoms of cancer of uterine cervix (Jeffcoate, 1975) are -

(i)   earliest is a blood stained discharge per vaginum

(ii)   irregular haemorrhage following coitus

(iii)   cachexia

(iv)   low backache

In dysplastic pre-invasive and invasive groups, the most common finding was discharge P/V (36.2%),irregular bleeding following coitus was seen in 14.4% cases. Pain in lower abdomen and low backache was seen in 14.4% cases.

According to Shaw (1971), the typical haemorrhage in carcinoma of cervix is superimposed upon normal menstrual bleeding. In most instances the haemorrhage follows coitus and takes the form of a trickle of blood which may persist for several days. Vaginal bleeding in women of postmenopausal age should always be suspected as being caused by carcinoma of cervix. The vaginal discharge in carcinoma of cervix is blood stained and has a characteristic offensive odour. The discharge originates from necrotic areas on the surface of

growth. In women of postmenopausal age a watery vaginal discharge may be an early symptom. Cachexia and pain are well marked in advanced growth.

Cervical trauma, chronic cervicitis and ectopy are no longer considered as etiological factors in cervical intraepithelial neoplasia. Yet there are links between this disease and the presence of the herpes simplex virus (type II) and papilloma virus in the vagina. The evidence derived from epidemiological, antigen and antibody studies plus molecular hybridization techniques demonstrates an association of the specific genital herpes virus (HSV-2) with cervical carcinoma. The demonstration that certain types of HPV are high risk factors (HPV 16 and 18) and some(HPV 6,10 and 11) are low risk may in future be of some clinical help. It must be accepted the HSV and HPV have been demonstrated to have a role in cervical carcinoma but the precise nature remain to be determined. The herpes and papilloma viruses are implicated by initiating changes in cervical cells during an unstable stage of their life cycle and therefore acting as mutagens and cofactors (Jeffcoate, 1975).

In our study, the most common finding was erosion (57.0%), followed by cervicovaginitis in 23.1% cases, erosion which bleed on touch was seen in 22.6% cases. In the menopausal age group the commonest finding was cervicovaginitis

in 30.0% cases followed by erosion which bleed on touch
in 28.0% cases. Prolapse was seen in 8.0% cases in meno-
pausal group. It has long been established that the pro-
lapsed cervix, although exposed to constant mechanical
irritation is remarkably free from the risk of cancer.
This was formerly explained by supposing that its dis-
placement removed it from the environment of vagina made
harmful by the 'exudates', perhaps the herpes or papilloma
virus should now be substituted for this term.

According to Shaw (1971), the four main signs
of cancer of uterine cervix are -

(i)   bleeds on touch

(ii)   friability

(iii)   hypertrophy and induration

(iv)   fixation to surrounding structures.

In our study, in dysplastic and invasive group,
erosion which bleed on touching was seen in 63.7% patients,
hypertrophied cervix was found in 10.8% whereas friable
cauliflower growth was seen in 8.6% cases. In most cases
digital examination of cervix is followed by profuse vaginal
bleeding. The bleeding is particularly well marked when the
growth is of cauliflower type. The bleeding is caused by
trauma, small capillaries being opened up when the growth
is damaged by the examining finger. Bleeding is also present
with vascular erosions, mucous polyp and myomatous polypi.

The carcinomatous area is friable and the degree of friability depends on the type of growth, the exfoliating exophytic growths bleed easily. Loss of mobility due to infection or malignant permeation, and induration may be present in advanced cases.

CYTOLOGY

Inflammation or hyperplasia

In our study the incidence of inflammation was 38.9% in reproductive age group and 46% cases in menopausal group. Dixit and Virkar (1971) found it in 2.9% cases while Domadia et al (1978) reported it in 2.63% cases and Mishra and Das (1979) in 5% cases. In an analysis of 1000 cervical smears in rural population of Andhra Pradesh 446 (44.6%) were found to be inflammatory (Sharda et al 1980). In another study the incidence of trichomonal vaginitis was 19.19% (Grismondi et al 1978). The incidence of inflammation was 66.6% of which trichomoas was present in 24.6%.

Mild and Moderate dysplasia

In our study the incidence of mild dysplasia was 28.4% in reproductive and 16% cases in menopausal group. Moderate dysplasia was seen in 14.7% cases in reproductive and 8.0% cases in menopausal group. An incidence varying from 2.3% to 7.5% to have been given by different authors

(Mackey et al 1959), Wahi and Luthra 1969, Rao et al 1973 and Chakarvarty et al (1976). This low incidence is due to the fact that they have done cytological study in all cases attending gynaecological O.P.D. Pande and Behra (1977) reported 5.49%, Patnaik and Mahapatra (1978) 9.73%, Misra and Das (1979) 15%, and Shah and Shah (1980) 12.62% cases of mild dysplasia. Pande and Bahera (1977) reported moderate dysplasia in 2.63% cases.

Severe dysplasia and suspicious of malignancy

In our study severe dysplasia was seen in 10.5% cases in reproductive, and menopausal age groups. 1.5% cases were suspicious of malignancy in reproductive and 4.0% cases in menopausal age group.

The incidence of severe dysplasia is comparatively higher in our study. The incidence has been reported to vary from 0.48% to 1.5% in various studies conducted by Mackey et al (1959), Wahi and Luthra (1969), Patnaik and Mahapatra (1978) and Ahuja and Reddy (1963).

Frank Malignancy

In our study malignancy was found in 2.6% cases in reproductive age group and in 12.0% cases in menopausal age group. Ahuja and Reddy (1963) reported it in 1.33%, Christopherson et al (1962) in 1.3%, Pande and Bahera (1967) in 1.16% and Shah and Shah (1980) in 0.67 percent.

The accuracy of cytologic diagnosis for dysplasia pre-invasive and invasive lesions of cervix were found to be as follows :

Graham et al (1949)   -   90%

Kors and Durfee (1955)   -   100%

Schnodt et al (1975)   -   96%

Klinsmann (1980)   -   92.8%

Mayalulla, U, Saraiya (1984) 91.0%

In our study the accuracy of cytology is 88.6%

COLPOSCOPY

The incidence of cervicovaginitis on colposcopy is 30%, (Caerera and Dexcus, 1972). In our study, the incidence of cervicovaginitis is 4.2% in reproductive age group and 12% in menopausal age group. Red punctate vaginitis was seen in 2.6% cases in reproductive group and in 8.0% cases in menopausal group. According to Maten Aragones (1971), the incidence is 2%, Guerrero et al (1962) gave 26.6%, Arenas et al show 26.4%. Thus the prevelance of inflammation is diversely estimated.

Ectopy is one of the commonest colposcopic finding. According to Dexcus and Carvera (1972), the incidence is 38.9% the higher being in younger patients. Maten-Anagone's (1971), Cano and others also show that incidence is higher in

young patients in whom ovarian activity is accentuated while its incidence is rare after 50 years. In our study ectopy was seen in 18.4% cases in reproductive age group and 4.0% in menopausal age group.

The incidence of cervical polyp is 6.0% (Dexeus and Carrera, 1972), 5.8% according to Gonzalez and Merlo, 1960) and 5.05% accordding to Matenu and Aragone's 1971. In our study it is 5.2% in reproductive age group and 4.0% in menopausal age group. The above results are comparable.

The colposcopic incidence of metaplasia is 52.6% and 20.6% in different studies by Dexcus and Carrera, in association with ectopy. In our study it is 7.8% in reproductive age group and 6.0% in menopausal age group.

The incidence of dysplasia, seen as a zone of atypical transformation on colposcopy varies from 2 to 3% (Dexeus and Carrera, 1971). In our study the incidence is higher 27.3% in reproductive and 12.0% in menopausal group.

The incidence of carcinoma in situ in screening programme varies from 0.08% in different studies by Calabrese (1958), Zinser (1965), Christopherson (1966), Carrera and Dexeus (1972). In our study it is 2.1% found in the reproductive age group.

The incidence of invasive cancer in a screening programme varies from 0.6% to 2.7% in studies conducted by

same authors as above. In our study, the incidence in 2.6%
in the reproductive age group. It is comparatively higher
in the menopausal age group being 16%.

The false negative colposcopy varies from 8.3% to
25.8%, according to Watz (1952), Burghardt and Bajardi (1954),
Gonzalem Merlo et al (1966), and Carrera and Dexcus (1972).
In our study it is 8.2%. The results are comparable.

HISTOPATHOLOGY

Cervical biopsies were indicated in 112 patients,
out of which 78 belonged to reproductive age group and 34
belonged to menopausal age group.

Incidence of chronic cervicitis varies from 35% to
85% on histopathological examination (Novak, 1958). In our
study it is 38.4% in reproductive age group and 26.4% in meno-
pausal age group. These results are comparable.

Out of these cases, inflammatory lesions were treated
medically. Cryosurgery was indicated in cases of mild, moderate
and a few cases of severe dysplasia. In these patients who did
not respond to cryosurgery and cytological smears showed posi-
tive findings, hystrectomy was carried out. In all hystrectomy
was indicated in 50 patients. Out of these 2 cases were of chro-
nic inflammation, 20 cases showed mild dysplastic changes in
the ectocervix, 17 cases showed moderate dysplasia, seven cases
were of severe dysplasia. 4 cases were carcinoma-in-situ. In
one case hystrectomy revealed an invasive lesion and it was
referred for radiotherapy. Seven more cases of invasive cancer
were referred for radiotherapy.

CONCLUSION & SUMMARY

SUMMARY AND CONCLUSION

In the present study a total of 240 patients were studied of which 190 belonged to reproductive age group and 50 belonged to menopausal age group. A further of 50 asymptomatic patients was taken.

All patients had proper history taken with through general and systemic examination followed by P/S and P/V examination.

A vaginal cytology and colposcopy was done in all cases. In 112 patients further investigation was required and their cervical biopsies were taken.

1. The commonest age group to be involved in reproductive group was from 31-35 years (26.8%), and in menopausal age group maximum number of patients were from 46 to 50 years (46.0%).

2. 50.5% of reproductive group patients were multipara (having four or more children), in menopausal group 40% patients were having more than 5 children.

3. The commonest symptom in both reproductive and menopausal group was leucorrhoea (42%) each. The next commonest finding is pain in lower abdomen (16.3% cases).

4. On perspeculum examination, the most common finding was erosion (57.0%), followed by cervicovaginitis in 23.1% cases.

5. In reproductive group pap smear of 38.9% patients showed an inflammatory smear, mild, moderate and severe dyskaryosis was seen in 28.4%, 14.7%, 10.5% respectively. In menopausal age group 46% showed an inflammatory smear mild, moderate and severe dyskaryosis was seen in 16%, 8% and 10% cases.

Pap smear showed that 1.5% cases were suspicious for malignancy and 2.6% were frankly malignant in reproductive group. In menopausal group 4% cases were suspicious of malignancy and 12% were frankly malignant.

6. On colposcopy, inflammation was seen in 8.9% cases in reproductive age group, and in 24.0% in menopausal group.

Ectopy was seen in 18.4% and 4% cases respectively, while polyp was seen in 5.2% and 4.0% cases.

Mild, moderate and severe dysplasia was seen in 27.3%, 15.7% and 11.5% in reproductive group respectively. While it was seen in 12.0%, 10.0% and 8.0% cases in menopausal group.

Carcinoma-in-situ was seen in 2.1% cases. Invasive carcinoma was seen in 2.6% in reproductive group and 16.0% cases in menopausal group.

7. Correlation of cytology with colposcopy showed an 79.3% accuracy. There were 12 false positive colposcopy and 8 false negative colposcopies.

8. Correlation of colposcopy with histology showed an accuracy of 82.4%. There were 7 false positive and 8 false negative colposcopy.

9. Correlation of cytology with colposcopically directed biopsies showed 89.6% correlation. There were 4 false positive and 6 false negative colposcopies.

10. The correlation between initial histological diagnosis by punch biopsy and final histological diagnosis by hystrectomy showed a good correlation of 96%.

Thus colposcopy has a complimentary rate with cytology in correct diagnosis of benign lesions and early diagnosis of dysplastic and malignant lesions of cervix.

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